

1 We claim:

1 1. A method to form a polymeric material, comprising the steps of:
2 providing a water immiscible solvent;
3 providing a condensation monomer, wherein said condensation monomer is
4 essentially insoluble in said water immiscible solvent, and wherein said condensation
5 monomer is a solid at room temperature;
6 forming a reaction mixture comprising a suspension of said condensation
7 monomer in said water immiscible solvent;
8 heating said reaction mixture;
9 collecting said polymeric material from said reaction mixture.

1 2. The method of claim 1, further comprising the step of adding one or more
2 emulsifiers to said reaction mixture prior to heating said reaction mixture.

1 3. The method of claim 2, further comprising the step of adding one or more
2 antioxidants to said reaction mixture prior to heating said suspension.

1 4. The method of claim 1, further comprising the steps of:
2 reacting a first molecule of said condensation monomer with a second molecule of
3 said condensation monomer to form a plurality of dimer molecules and a plurality of
4 water molecules;
5 removing said plurality of water molecules from said reaction mixture.

1 5. The method of claim 1, wherein:
2 said providing a water immiscible solvent further comprises providing naphtha
3 having a boiling point between about 190 °C and about 201 °C at ambient pressure;

4 said providing a condensation monomer step further comprises providing an
5 equimolar mixture of adipic acid and m-xylene diamine;
6 said heating step further comprises heating said reaction mixture to an internal
7 temperature of about 174 °C;
8 said method further comprising the steps of:
9 removing water from said reaction mixture;
10 increasing said internal temperature to about 200 °C; and
11 cooling said reaction mixture to room temperature.

1 6. The method of claim 1, wherein:

2 said providing a water immiscible solvent step further comprises providing
3 naphtha having a boiling point between about 190 °C and about 201 °C at ambient
4 pressure;
5 said providing a condensation monomer step further comprises providing a
6 mixture of diammonium aspartate and monosodium/ammonium aspartate;
7 dispersing said monomer mixture in said naphtha to form a reaction mixture
8 comprising a suspension;
9 heating said reaction mixture to about 174 °C;
10 removing water from said reaction mixture; and
11 cooling said reaction mixture to room said polymeric material.

1 7. The method of claim 6, wherein said providing step further comprises
2 providing a monomer mixture comprising about equimolar amounts of diammonium
3 aspartate and monosodium/ammonium aspartate.

1 8. The method of claim 7, further comprising the step of adding sorbitan
2 monostearate to said reaction mixture prior to heating said reaction mixture.

1 9. A method to form a polymeric material, comprising the steps of:
2 providing a water immiscible solvent;
3 providing a condensation monomer, wherein said condensation monomer is
4 essentially insoluble in said water immiscible solvent, and wherein said condensation
5 monomer;

6 forming a reaction mixture comprising an emulsion comprising said condensation
7 monomer and said water immiscible solvent;
8 heating said reaction mixture;
9 precipitating said polymeric material from said reaction mixture.

1 10. The method of claim 9, wherein:
2 said providing a condensation monomer step further comprises providing a
3 solution comprising about (M) moles of diammonium aspartate and about (M) moles of
4 sodium/ammonium aspartate in about (N) mL of water;

5 said heating step further comprises heating said reaction mixture to an internal
6 temperature of about 100 °C;

7 said method further comprising the steps of:

8 removing said (N) mL of water from said reaction mixture;

9 increasing said internal temperature to about 130 °C;

10 removing about (M) moles of water from said reaction mixture;

11 forming a white colored precipitate;

12 increasing said internal temperature to about 171 °C;

13 forming a yellow-colored precipitate; and
14 cooling said reaction mixture to room temperature under a nitrogen atmosphere to
15 form an orange-colored polymeric material.

1 11. The method of claim 9, wherein:
2 said providing a condensation monomer step further comprises providing a
3 solution comprising about (M) moles of adipic acid and about (M) moles of m-xylene
4 diamine in about (N) mL of water;
5 said heating step further comprises heating said reaction mixture to an internal
6 temperature of about 100 °C;
7 said method further comprising the steps of:
8 removing said (N) mL of water from said reaction mixture;
9 increasing said internal temperature to about 130 °C;
10 removing about (M) moles of water from said reaction mixture;
11 forming a white colored precipitate;
12 increasing said internal temperature to about 201 °C;
13 cooling said reaction mixture to room temperature under a nitrogen atmosphere;
14 and
15 collecting said polymeric material.

1 12. A polymeric material, formed by:
2 providing a water immiscible solvent;
3 providing a condensation monomer, wherein said condensation monomer is
4 essentially insoluble in said water immiscible solvent, and wherein said condensation
5 monomer is a solid at room temperature;

6 forming a reaction mixture comprising a suspension of said condensation
7 monomer in said water immiscible solvent;
8 heating said reaction mixture;
9 collecting said polymeric material from said reaction mixture.

1 13. The polymeric material of claim 12, wherein:

2 said providing a water immiscible solvent further comprises providing naphtha
3 having a boiling point between about 190 °C and about 201 °C at ambient pressure;

4 said providing a condensation monomer step further comprises providing an
5 equimolar mixture of adipic acid and m-xylene diamine;

6 said heating step further comprises heating said reaction mixture to an internal
7 temperature of about 174 oC;

8 said method further comprising the steps of:

9 removing water from said reaction mixture;

10 increasing said internal temperature to about 200 oC; and

11 cooling said reaction mixture to room temperature.

1 14. The polymeric material of claim 12, wherein:

2 said providing a water immiscible solvent step further comprises providing
3 naphtha having a boiling point between about 190 °C and about 201 °C at ambient
4 pressure;

5 said providing a condensation monomer step further comprises providing a
6 mixture of diammonium aspartate and monosodium/ammonium aspartate;

7 dispersing said monomer mixture in said naphtha to form a reaction mixture
8 comprising a suspension;

9 heating said reaction mixture to about 174 °C;
 10 removing water from said reaction mixture; and
 11 cooling said reaction mixture to room said polymeric material.

1 15. The polymeric material of claim 14, wherein said providing step further
 2 comprises providing a monomer mixture comprising about equimolar amounts of
 3 diammonium aspartate and monosodium/ammonium aspartate.

1 16. The polymeric material of claim 15, further comprising the step of adding
 2 sorbitan monostearate to said reaction mixture prior to heating said reaction mixture.

1 17. A polymeric material, formed by:
 2 providing a water immiscible solvent;
 3 providing a condensation monomer, wherein said condensation monomer is
 4 essentially insoluble in said water immiscible solvent, and wherein said condensation
 5 monomer;
 6 forming a reaction mixture comprising an emulsion comprising said condensation
 7 monomer and said water immiscible solvent;
 8 heating said reaction mixture;
 9 precipitating said polymeric material from said reaction mixture.

1 18. The polymeric material of claim 17, wherein:
 2 said providing a condensation monomer step further comprises providing a
 3 solution comprising about (M) moles of diammonium aspartate and about (M) moles of
 4 sodium/ammonium aspartate in about (N) mL of water;
 5 said heating step further comprises heating said reaction mixture to an internal
 6 temperature of about 100 °C;

7 said method further comprising the steps of:
8 removing said (N) mL of water from said reaction mixture;
9 increasing said internal temperature to about 130 °C;
10 removing about (M) moles of water from said reaction mixture;
11 forming a white colored precipitate;
12 increasing said internal temperature to about 171 °C;
13 forming a yellow-colored precipitate; and
14 cooling said reaction mixture to room temperature under a nitrogen atmosphere to
15 form an orange-colored polymeric material.

1 19. The polymeric material of claim 17, wherein:

2 said providing a condensation monomer step further comprises providing a
3 solution comprising about (M) moles of adipic acid and about (M) moles of m-xylene
4 diamine in about (N) mL of water;

5 said heating step further comprises heating said reaction mixture to an internal
6 temperature of about 100 °C;

7 said method further comprising the steps of:
8 removing said (N) mL of water from said reaction mixture;
9 increasing said internal temperature to about 130 °C;
10 removing about (M) moles of water from said reaction mixture;
11 forming a white colored precipitate;
12 increasing said internal temperature to about 201 °C;
13 cooling said reaction mixture to room temperature under a nitrogen atmosphere;
14 and

15 collecting said polymeric material.